Drawmer DC2476 MkII

HUGH ROBJOHNS MIBS reports on a flexible and comprehensive digital signal processor for mastering and transmission control applications.

Drawmer's Masterflow DC2476 was designed to serve as a 'mastering processor', in a similar vein to TC Electronic's ubiquitous Finalizer 96K. However, such is its flexibility and sophistication that the range of applications extends well beyond the mastering room and into the broadcast environment – including transmission output control duties, for example. The MkII version reviewed here differs from the original mainly in its inclusion of a sample rate converter, although there are also several software enhancements providing additional functionality, most of which benefit broadcast users directly.

The DC2476 is packed with technology, starting with a pair of superb A-D and D-A converters providing a very high quality route to and from the digital domain. The converters support 16, 18, 20 and 24 bit resolutions (with three shaped dither options), and all the common sample rates between 32 and 96kHz. TheA-D and sample rate converter can be referenced to internal, high stability crystals, or an external word clock, or the digital audio inputs (AES or coaxial S/PDIF).

The unit is configured through a small monochrome LCD using a quartet of cursor keys and a rotary encoder – the latter with an over-press switch. A further button toggles the menu functionality between selecting the various signal processing modules and editing the parameters of the selected module. The operation is simple and intuitive on the whole, although some parameters are not located in the most obvious places.

Processing Chain

The input signal passes through a notional chain of eight processing modules, the order of which is fixed. Each element can be independently bypassed, and an intelligent level control system prevents internal overloads by automatically adjusting and optimising the overall gain structure through each processing element.

The first module is an input conditioner with facilities to alter the level, polarity and balance of left and right inputs, as well as swapping left and right channels. Unfortunately, there is no provision to handle MS inputs and no high-pass filter options, although I understand both facilities are being considered for future software updates.

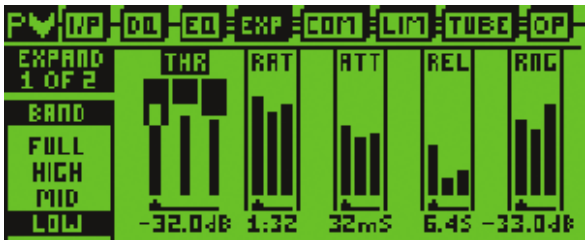
The next module provides a dynamic equaliser and a full-band 'bootstrap' compressor/expander. The 'bootstrap' means that an automatic gain make-up facility is incorporated so that peak levels remain consistent regardless of the degree of dynamic modification. The Dynamic EQ comprises a single parametric equaliser band spanning 64Hz to 8kHz in semitone increments, with ±12dB of gain and an adjustable bandwidth from 0.25 to 3 octaves. It can be used to reduce or enhance a specific frequency region in a level-conscious way – to tame sibilance or a resonance, perhaps, or to lift the level of a kick drum within a mix without muddying the bottom end.

The third processing block is a conventional five-band parametric equaliser, which sounds and operates in a remarkably 'analogue-like' manner. The top and bottom bands can be switched between bell and shelf modes, all bands can be tuned between 32Hz and 22kHz, and bandwidths adjusted between 0.08 octave (1 semitone!) and five octaves.

The following five blocks provide multiband processing, the first three offering dynamic control (expansion, compression and limiting). The audio is split into three bands with adjustable crossover frequencies, and pass through all five processes before being recombined at the output. For the dynamics processes, different thresholds, ratios, attack and release times, and gain or range can be applied to each band, affording a huge degree of control. The LCD display provides a very clear indication of the parameter settings for each band, complemented with LED metering on the front panel to show the gain reduction of each band. Additional indicators show expansion and limiting activity and programme levels are shown on two LED bar graph meters: a small one for input level, and a high resolution one for output level.

The brickwall limiter section was originally configured to limit only at 0dBfs, but the MkII unit features an adjustable threshold, setting the maximum output level anywhere between 0 and -12dBfs, in 0.5dB decrements. Unfortunately, because this was a late addition, there was no space on the limiter menu page, this function is tucked away on the Digital I/O menu. Fortunately, it tends to be a set and forget function, so this isn't particularly inconvenient, but the facility could be improved with 0.1dB resolution –

The EQ processing menu



The three-band expander menu.

especially close to 0dBfs. Incorporated within the limiter menu is a stereo width control, allowing the image width of each of the three frequency ranges to be modified as required.

The penultimate three-band process module emulates triode valve circuitry, introducing a controllable amount of harmonic distortion and saturation. Increasing the level of the high band creates an effect not unlike an harmonic exciter, while the bottom band boosts the density of low instruments without obvious level changes.

The output menu page allows each of the three bands to be balanced in level against its neighbours for tonal shaping before being recombined to a composite signal once again. There are also facilities here for an automated fade-in and fade-out, with three curve options.

While any process module is selected for parameter editing it can also be bypassed or solo'd, and the current processing can be compared instantly with any preset configuration stored in the 128 user or 50 factory memories. There are even facilities to normalise the overall gains of the current and reference set ups to make the comparison as fair as possible. Drawmer have also included an onboard help system to explain the functionality of the currently selected process module, if required.

A 1kHz tone generator is also built into the DC2476, with preset level options of -20 -18, -12, -6 and 0dBfs. Every parameter of the unit can also be controlled via MIDI, and a PCMCIA memory card slot is provided for data archiving or to aid the transfer of parameters to other DC2476 processors.

In Use

While the design impetus for the DC2476 may have been to provide a one-box mastering solution, its very powerful signal processing facilities can be applied to a wide range of other applications, including many appropriate to radio, TV and Internet production and broadcasting. The sheer amount, flexibility and precision of signal processing here is staggering, enabling fine control and polishing of complex audio signals. The dynamic control is exemplary with the limiting function providing absolute brickwall safety while retaining a very transparent sound quality. I was very impressed with the versatility of this unit and with its ease of operation, finding it a superb facility for post-production applications, as well as for overall programme output duties.

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